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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,494

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EXAMINER

MATTHIAS, JONATHAN R

ART UNIT

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3748

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,494	Applicant(s) KANEEDA ET AL.	
	Examiner Jonathan Matthias	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/20/06; 02/09/07; 09/18/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 6, 10, 11, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by US PG PUB No. 2003/0039597 to Deeba et al. (Deeba).

In reference to claim 1, Deeba discloses a NO_x purification catalyst, which comprises a sulfur component trapping agent for trapping sulfur components, which is arranged before the NO_x trapping catalyst and a catalyst for oxidizing the sulfur components, disposed before the sulfur component trapping agent, wherein the sulfur component trapping agent does not substantially release the trapped sulfur components under the conditions of the internal combustion engine (see Fig. 1; pars. 0046, 0060, 0110, 0114-0121, Examples 1-2).

In reference to claim 5, Deeba discloses the sulfates contained in the sulfur component trapping agent has a melting temperature or decomposition temperature of 750 °C or higher (par. 0112).

In reference to claim 6, Deeba discloses the sulfur component trapping agent is disposed below the engine (see Fig. 1).

In reference to claim 10, Deeba discloses the catalyst for oxidizing sulfur components contains at least one of Pt, Pd and Rh (Abstract; pars. 0002, 0009, 0026, 0038, 0062, 0073, etc.).

In reference to claim 11, the NO_x trapping catalyst contains at least one of alkali metals and alkaline earth metals and at least one of noble metals (pars. 0006-0012, 0096), and has a function to trap SO_x under a lean air fuel condition and a function to release SO_x in a rich or stoichiometric air fuel condition by heating the catalyst to 500 °C or higher (par. 0112).

With regards to claim 17, under the principles of inherency, if a prior art device in its normal and usual operation would necessarily perform the method claimed then the method claimed be considered to be anticipated by the prior art device. Therefore, the device as taught by the Deeba would meet the limitations of the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 2-4, 9, 13-16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba.

In reference to claims 2-4, 9, and 13, Deeba discloses an exhaust gas passage for an internal combustion engine into which exhaust gas of lean air fuel ratio and rich or stoichiometric air fuel ratio flows (see Fig. 1), a NO_x trapping catalyst that functions to trap NO_x in the exhaust gas when the air fuel ratio is lean (pars. 0005-0007, 0047, 0111-0112), a sulfur component trapping agent for trapping sulfur components in the exhaust gas, which is disposed before the NO_x trapping catalyst, and a catalyst for oxidizing the sulfur components, which is disposed before the sulfur component trapping agent (see pars. 0046, 0060, 0110, 0114-0121, Examples 1-2), wherein the sulfur component trapping agent contains at least one of alkali metals and alkaline earth metals and an amount of Pt, Pd and Rh (Abstract; pars. 0002, 0009, 0026, 0038, 0062, 0073, etc.).

In reference to claim 14, Deeba discloses the sulfur component trapping agent contains at least one selected from the group consisting of alkali metals, alkaline earth metals, Ce, Al, Y, La and Ni (Abstract; pars. 0002, 0027, 0062, 0083, 0089, 0092, 0117, 0119).

In reference to claim 15, Deeba discloses a honeycomb (par. 0094) substrate made of cordierite or metal (par. 0015, 0018, 0019), a porous support, and a sulfur

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trapping agent supported on the porous support (see pars. 0046, 0060, 0110, 0114-0121, Examples 1-2).

In reference to claim 16, under the principles of inherency, if a prior art device in its normal and usual operation would necessarily perform the method claimed then the method claimed be considered to be anticipated by the prior art device. Therefore, the device as taught by the modified Deeba would meet the limitations of the claim.

In reference to claim 18, Deeba discloses releasing the sulfur components from the NO_x purifying catalyst, wherein the releasing step is carried out by changing the air fuel ratio to rich or stoichiometric and elevating temperature of the NO_x purifying catalyst to 500 °C or higher (par. 0112).

With regards to the limitations of flow rate, trapping rate, release rate, amount of trapping material, and amount of catalytic material, these are considered result-effective variables which are dependent on factors such as the type of fuel being used, the running conditions of the engine, and the emissions regulations to be met. It has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP 2144.05). It would have been obvious to one having ordinary skill in the art at the time of invention to have optimized these variables to have the predictable result of reducing the emission of harmful chemicals from an engine exhaust.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba as applied to claim 1 above, and further in view of US PG PUB No. 2002/0053202 to Akama et al. (Akama).

Deeba discloses the apparatus of claim 1, but fails to disclose a filter, the filter being formed on a part of the filter. Akama discloses a similar apparatus is brought in merely to show that it is conventional to utilize catalyzed filters in exhaust treatment devices. It has been held that combining prior art elements to yield predictable results is obvious (see MPEP 2141). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to have included a catalyzed filter, as suggested by Akama in the apparatus of Deeba to have the predictable result of reduced particulate emissions from an exhaust stream.

7. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba as applied to claim 1 above, and further in view of US PG PUB No. 2007/0183952 to Jordan et al. (Jordan).

Deeba discloses the apparatus of claim 1, but fails to disclose the sulfur component trapping agent is replaceable with another. Jordan is brought in merely to demonstrate that it is conventional in the art to employ replaceable sulfur trapping agents in exhaust treatment apparatuses (par. 0031). It has been held that combining prior art elements to yield predictable results is obvious (see MPEP 2141). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to have included a replaceable trapping agent, as suggested by Jordan, into the apparatus of Deeba to have the predictable result of maintaining the treatment capabilities of the system over the lifetime of the system.

8. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PG PUB No. 2003/0010020 to Taga et al. (Taga) in view of US Patent No. 6,263,666 to Kubo et al. (Kubo).

In reference to claim 20, Taga discloses a NO_x purification catalyst (17, Fig. 1) for trapping NO_x, a sulfur component trapping agent disposed before the NO_x purification catalyst for trapping sulfur components (17, Fig. 1), a sulfur component oxidizing catalyst (16, Fig. 1) disposed before the sulfur component trapping agent, which comprises means for diagnosing the sulfur component trapping agent for every sulfur component releasing step, based on a difference or ratio of the NO_x purification rates (pars. 0035-0084). Taga fails to disclose means for indicating replacement of the sulfur component trapping agent when the sulfur component trapping agent is degraded to a predetermined level. Kubo discloses a similar system and is brought in merely to demonstrate it is conventional in the art to include an indicating means to indicate when an aftertreatment device is degraded (col. 8, lines 62-67). It has been held that combining prior art elements to yield predictable results is obvious (see MPEP 2141). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to have included the conventional warning means as suggested by Kubo into the device as disclosed by Taga to have the predictable result of maintaining the treatment capabilities of the system over the lifetime of the system.

With regards to claim 19, under the principles of inherency, if a prior art device in its normal and usual operation would necessarily perform the method claimed then the

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method claimed be considered to be anticipated by the prior art device. Therefore, the device as taught by the modified Taga would meet the limitations of the claim.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Matthias whose telephone number is (571) 270-5840. The examiner can normally be reached on Monday-Friday 7:00AM-4:00PM.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas E. Denion/
Supervisory Patent Examiner, Art Unit 3748

JM